Installing E1 Net Modules in ASN Platforms

Part No. 115375-A Rev. A
January 1997

Bay Networks

Bay Networks

4401 Great America Parkway
Santa Clara, CA 95054

8 Federal Street
Billerica, MA 01821

Copyright © 1988–1997 Bay Networks, Inc.

All rights reserved. Printed in the USA. January 1997.

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Bay Networks, Inc.

The software described in this document is furnished under a license agreement and may only be used in accordance with the terms of that license. A summary of the Software License is included in this document.

Restricted Rights Legend

Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013.

Notice for All Other Executive Agencies

Notwithstanding any other license agreement that may pertain to, or accompany the delivery of, this computer software, the rights of the United States Government regarding its use, reproduction, and disclosure are as set forth in the Commercial Computer Software-Restricted Rights clause at FAR 52.227-19.

Trademarks of Bay Networks, Inc.

ACE, AFN, AN, BCN, BLN, BN, BNX, CN, FN, FRE, GAME, LN, Optivity, PPX, Bay Networks, SynOptics, SynOptics Communications, Wellfleet and the Wellfleet logo are registered trademarks and ANH, ASN, Bay•SIS, BayStack, BCNX, BLNX, EZ Install, EZ Internetwork, EZ LAN, PathMan, PhonePlus, Quick2Config, RouterMan, SPEX, Bay Networks Press, the Bay Networks logo and the SynOptics logo are trademarks of Bay Networks, Inc.

Third-Party Trademarks

All other trademarks and registered trademarks are the property of their respective owners.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Bay Networks, Inc. reserves the right to make changes to the products described in this document without notice.

Bay Networks, Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Portions of the code in this software product are Copyright © 1988, Regents of the University of California. All rights reserved. Redistribution and use in source and binary forms of such portions are permitted, provided that the above copyright notice and this paragraph are duplicated in all such forms and that any documentation, advertising materials, and other materials related to such distribution and use acknowledge that such portions of the software were developed by the University of California, Berkeley. The name of the University may not be used to endorse or promote products derived from such portions of the software without specific prior written permission.

SUCH PORTIONS OF THE SOFTWARE ARE PROVIDED “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In addition, the program and information contained herein are licensed only pursuant to a license agreement that contains restrictions on use and disclosure (that may incorporate by reference certain limitations and notices imposed by third parties).

Electromagnetic Emissions

Meets requirements of:

FCC Part 15, Class A
EN 55 022 (CISPR 22:1985), Class A <and Class B>
VCCI Class 1 ITE

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L’étiquette du ministère des Communications du Canada indique que l’appareillage est certifié, c’est-à-dire qu’il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l’appareillage fonctionnera à la satisfaction de l’utilisateur.

Avant d’installer l’appareillage, s’assurer qu’il peut être branché aux installations du service de télécommunications local. L’appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d’un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu’une telle installation n’assure pas un service parfait en tout temps.

Les réparations de l’appareillage certifié devraient être confiées à un service d’entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l’utilisateur ou de mauvais fonctionnement de l’appareillage, le service de télécommunications peut demander le débranchment de l’appareillage.

Pour leur propre sécurité, les utilisateurs devraient s’assurer que les mises à la terre des lignes de distribution d’électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Notes explicatives du ministère des Communications: limites visant les accessoires

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchment de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Réglement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Réglement sur le brouillage radioélectrique du ministère des Communications du Canada.

Bay Networks Software License

Note: This is Bay Networks basic license document. In the absence of a software license agreement specifying varying terms, this license -- or the license included with the particular product -- shall govern licensee's use of Bay Networks software.

This Software License shall govern the licensing of all software provided to licensee by Bay Networks ("Software"). Bay Networks will provide licensee with Software in machine-readable form and related documentation ("Documentation"). The Software provided under this license is proprietary to Bay Networks and to third parties from whom Bay Networks has acquired license rights. Bay Networks will not grant any Software license whatsoever, either explicitly or implicitly, except by acceptance of an order for either Software or for a Bay Networks product ("Equipment") that is packaged with Software. Each such license is subject to the following restrictions:

1. Upon delivery of the Software, Bay Networks grants to licensee a personal, nontransferable, nonexclusive license to use the Software with the Equipment with which or for which it was originally acquired, including use at any of licensee's facilities to which the Equipment may be transferred, for the useful life of the Equipment unless earlier terminated by default or cancellation. Use of the Software shall be limited to such Equipment and to such facility. Software which is licensed for use on hardware not offered by Bay Networks is not subject to restricted use on any Equipment, however, unless otherwise specified on the Documentation, each licensed copy of such Software may only be installed on one hardware item at any time.
2. Licensee may use the Software with backup Equipment only if the Equipment with which or for which it was acquired is inoperative.
3. Licensee may make a single copy of the Software (but not firmware) for safekeeping (archives) or backup purposes.
4. Licensee may modify Software (but not firmware), or combine it with other software, subject to the provision that those portions of the resulting software which incorporate Software are subject to the restrictions of this license. Licensee shall not make the resulting software available for use by any third party.
5. Neither title nor ownership to Software passes to licensee.
6. Licensee shall not provide, or otherwise make available, any Software, in whole or in part, in any form, to any third party. Third parties do not include consultants, subcontractors, or agents of licensee who have licensee's permission to use the Software at licensee's facility, and who have agreed in writing to use the Software only in accordance with the restrictions of this license.
7. Third-party owners from whom Bay Networks has acquired license rights to software that is incorporated into Bay Networks products shall have the right to enforce the provisions of this license against licensee.
8. Licensee shall not remove or obscure any copyright, patent, trademark, trade secret, or similar intellectual property or restricted rights notice within or affixed to any Software and shall reproduce and affix such notice on any backup copy of Software or copies of software resulting from modification or combination performed by licensee as permitted by this license.

Bay Networks Software License *(continued)*

9. Licensee shall not reverse assemble, reverse compile, or in any way reverse engineer the Software. [Note: For licensees in the European Community, the Software Directive dated 14 May 1991 (as may be amended from time to time) shall apply for interoperability purposes. Licensee must notify Bay Networks in writing of any such intended examination of the Software and Bay Networks may provide review and assistance.]
10. Notwithstanding any foregoing terms to the contrary, if licensee licenses the Bay Networks product "Site Manager," licensee may duplicate and install the Site Manager product as specified in the Documentation. This right is granted solely as necessary for use of Site Manager on hardware installed with licensee's network.
11. This license will automatically terminate upon improper handling of Software, such as by disclosure, or Bay Networks may terminate this license by written notice to licensee if licensee fails to comply with any of the material provisions of this license and fails to cure such failure within thirty (30) days after the receipt of written notice from Bay Networks. Upon termination of this license, licensee shall discontinue all use of the Software and return the Software and Documentation, including all copies, to Bay Networks.
12. Licensee's obligations under this license shall survive expiration or termination of this license.

Contents

About This Guide

Conventions xv
Acronyms xv
Ordering Bay Networks Publications xvi

Technical Support and Online Services

Bay Networks Customer Service xviii
Bay Networks Information Services xix
World Wide Web xix
Customer Service FTP xix
Support Source CD xx
CompuServe xx
InfoFACTS xxi
How to Get Help xxi

Chapter 1
Installing a Net Module

Removing the Component Tray 1-2
Attaching the Antistatic Wrist Strap 1-4
Removing Filler Brackets 1-5
Removing a Net Module 1-5
Verifying the Net Module Jumper Settings 1-7
Installing a Net Module 1-10
Installing a Filler Bracket 1-11
Replacing the Component Tray 1-13

Chapter 2
Checking the MCE1 Net Module LEDs

Appendix A
Cabling Requirements for the Net Module

Appendix B
Requirements for European Operation

Installation Requirements B-1
Power Requirements B-1
Clearances and Creepage Distances B-2
MCE1 Net Module Safety Status B-4
Strap (Jumper) Settings (Order No. AF2104004) B-5

Figures

Figure 1-1. Removing the Component Tray 1-3
Figure 1-2. Locating Net Modules and Filler Brackets 1-5
Figure 1-3. Preparing to Remove a Net Module 1-6
Figure 1-4. Removing a Net Module from the Connector 1-7
Figure 1-5. Jumper Locations on the MCE1 Net Module 1-8
Figure 1-6. Aligning a Net Module 1-11
Figure 1-7. Installing a Filler Bracket 1-12
Figure 2-1. MCE1 Net Module LEDs 2-1
Figure A-1. Cable Order No. AA0018014 ..... A-1
Figure B-1. Clearances and Creepage Distances B-3

Tables

Table 1-1. MCE1 Net Module Jumper Settings 1-9
Table 2-1. Functions of the MCE1 Net Module LEDs 2-1
Table A-1. MCE1 RJ45 to RJ45 Cable (Order No. AA0018014) A-1
Table B-1. Net Module Power Requirements B-1
Table B-2. Net Module Clearances and Creepage Distances B-2
Table B-3. MCE1 Net Module Safety Status B-4
Table B-4. MCE1 Net Module 75-ohm Single Settings B-5

About This Guide

Read this guide if you are responsible for installing a Multichannel E1 (MCE1) net module in a Bay Networks® Access Stack Node (ASN™) platform. This guide describes how to

- Install a net module (Chapter 1)
- Interpret the LEDs on the net module (Chapter 2)

This guide also describes requirements for cabling the link module (Appendix A) and operating it in Europe (Appendix B).

Conventions

italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.

Acronyms

LED	light-emitting diode
MCE1	Multichannel E1
SELV	safety extra-low voltage
TNV	telecommunications network voltage

Ordering Bay Networks Publications

To purchase additional copies of this document or other Bay Networks publications, order by part number from the Bay Networks Press™ at the following telephone or fax numbers:

- Telephone - U.S./Canada 1-888-4BAYPRESS
- Telephone - International 1-510-490-4752
- Fax 1-510-498-2609

You can also use these numbers to request a free catalog of Bay Networks Press product publications.

Technical Support and Online Services

To ensure comprehensive network support to our customers and partners worldwide, Bay Networks Customer Service has Technical Response Centers in key locations around the globe:

- Billerica, Massachusetts
- Santa Clara, California
- Sydney, Australia
- Tokyo, Japan
- Valbonne, France

The Technical Response Centers are connected via a redundant Frame Relay Network to a Common Problem Resolution system, enabling them to transmit and share information, and to provide live, around-the-clock support 365 days a year.

Bay Networks Information Services complement the Bay Networks Service program portfolio by giving customers and partners access to the most current technical and support information through a choice of access/retrieval means. These include the World Wide Web, CompuServe, Support Source CD, Customer Support FTP, and InfoFACTS document fax service.

Bay Networks Customer Service

If you purchased your Bay Networks product from a distributor or authorized reseller, contact that distributor's or reseller's technical support staff for assistance with installation, configuration, troubleshooting, or integration issues.

Customers can also purchase direct support from Bay Networks through a variety of service programs. As part of our PhonePlus™ program, Bay Networks Service sets the industry standard, with 24-hour, 7-days-a-week telephone support available worldwide at no extra cost. Our complete range of contract and noncontract services also includes equipment staging and integration, installation support, on-site services, and replacement parts delivery -- within approximately 4 hours.

To purchase any of the Bay Networks support programs, or if you have questions on program features, use the following numbers:

Region	Telephone Number	Fax Number
United States and Canada	1-800-2LANWAN; enter Express Routing Code (ERC) 290 when prompted (508) 436-8880 (direct)	(508) 670-8766
Europe	(33) 92-968-300	(33) 92-968-301
Asia/Pacific Region	(612) 9927-8800	(612) 9927-8811
Latin America	(407) 997-1713	(407) 997-1714

In addition, you can receive information on support programs from your local Bay Networks field sales office, or purchase Bay Networks support directly from your authorized partner.

Bay Networks Information Services

Bay Networks Information Services provide up-to-date support information as a first-line resource for network administration, expansion, and maintenance. This information is available from a variety of sources.

World Wide Web

The Bay Networks Customer Support Web Server offers a diverse library of technical documents, software agents, and other important technical information to Bay Networks customers and partners.

A special benefit for contracted customers and resellers is the ability to access the Web Server to perform Case Management. This feature enables your support staff to interact directly with the network experts in our worldwide Technical Response Centers. A registered contact with a valid Site ID can

- View a listing of support cases and determine the current status of any open case. Case history data includes severity designation, and telephone, e-mail, or other logs associated with the case.
- Customize the listing of cases according to a variety of criteria, including date, severity, status, and case ID.
- Log notes to existing open cases.
- Create new cases for rapid, efficient handling of noncritical network situations.
- Communicate directly via e-mail with the specific technical resources assigned to your case.

The Bay Networks URL is *http://www.baynetworks.com*. Customer Service is a menu item on that home page.

Customer Service FTP

Accessible via URL *ftp://support.baynetworks.com* (134.177.3.26), this site combines and organizes support files and documentation from across the Bay Networks product suite, including switching products from our Centillion™ and Xylogics® business units. Central management and sponsorship of this FTP site lets you quickly locate information on any of your Bay Networks products.

Support Source CD

This CD-ROM -- sent quarterly to all contracted customers -- is a complete Bay Networks Service troubleshooting knowledge database with an intelligent text search engine.

The Support Source CD contains extracts from our problem-tracking database; information from the Bay Networks Forum on CompuServe; comprehensive technical documentation, such as Customer Support Bulletins, Release Notes, software patches and fixes; and complete information on all Bay Networks Service programs.

You can run a single version on Macintosh Windows 3.1, Windows 95, Windows NT, DOS, or UNIX computing platforms. A Web links feature enables you to go directly from the CD to various Bay Networks Web pages.

CompuServe

For assistance with noncritical network support issues, Bay Networks Information Services maintain an active forum on CompuServe, a global bulletin-board system. This forum provides file services, technology conferences, and a message section to get assistance from other users.

The message section is monitored by Bay Networks engineers, who provide assistance wherever possible. Customers and resellers holding Bay Networks service contracts also have access to special libraries for advanced levels of support documentation and software. To take advantage of CompuServe's recently enhanced menu options, the Bay Networks Forum has been re-engineered to allow links to our Web sites and FTP sites.

We recommend the use of CompuServe Information Manager software to access these Bay Networks Information Services resources. To open an account and receive a local dial-up number in the United States, call CompuServe at 1-800-524-3388. Outside the United States, call 1-614-529-1349, or your nearest CompuServe office. Ask for Representative No. 591. When you are on line with your CompuServe account, you can reach us with the command **GO BAYNET**.

InfoFACTS

InfoFACTS is the Bay Networks free 24-hour fax-on-demand service. This automated system has libraries of technical and product documents designed to help you manage and troubleshoot your Bay Networks products. The system responds to a fax from the caller or to a third party within minutes of being accessed.

To use InfoFACTS in the United States or Canada, call toll-free 1-800-786-3228. Outside North America, toll calls can be made to 1-408-764-1002. In Europe, toll-free numbers are also available for contacting both InfoFACTS and CompuServe. Please check our Web page for the listing in your country.

How to Get Help

Use the following numbers to reach your Bay Networks Technical Response Center:

Technical Response Center	Telephone Number	Fax Number
Billerica, MA	1-800-2LANWAN	(508) 670-8765
Santa Clara, CA	1-800-2LANWAN	(408) 764-1188
Valbonne, France	(33) 92-968-968	(33) 92-966-998
Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Chapter 1
Installing a Net Module

Note: With the MCE1 net module installed, the ASN must use a fast-packet cache.

To install an MCE1 net module in an ASN:

1. Remove the ASN component tray.
2. Attach the antistatic wrist strap.
3. Remove the filler brackets.
4. Remove a net module (if necessary).
5. Verify the new net module jumper settings.
6. Install the new net module.
7. Replace the filler brackets.
8. Replace the component tray.

The following sections describe these steps.

Note: Experienced network operators can safely perform the user-serviceable procedures described in this book.

Removing the Component Tray

To remove the component tray:

1. **Turn off the ASN.**
2. **Detach all cables from the ASN back panel.**
3. **Using a Phillips screwdriver, loosen the two captive screws that fasten the tray to the chassis (Figure 1-1).**
4. **Pull the two captive screws and gently slide the tray out of the chassis (Figure 1-1).**

   Hold the sides and bottom of the tray to support it, and try to keep the tray level as you slide it out.
5. **Place the tray on a sturdy work surface.**

Caution: Do not touch any components or boards in the ASN until you have attached an antistatic wrist strap. See the next section, “Attaching the Antistatic Wrist Strap.”

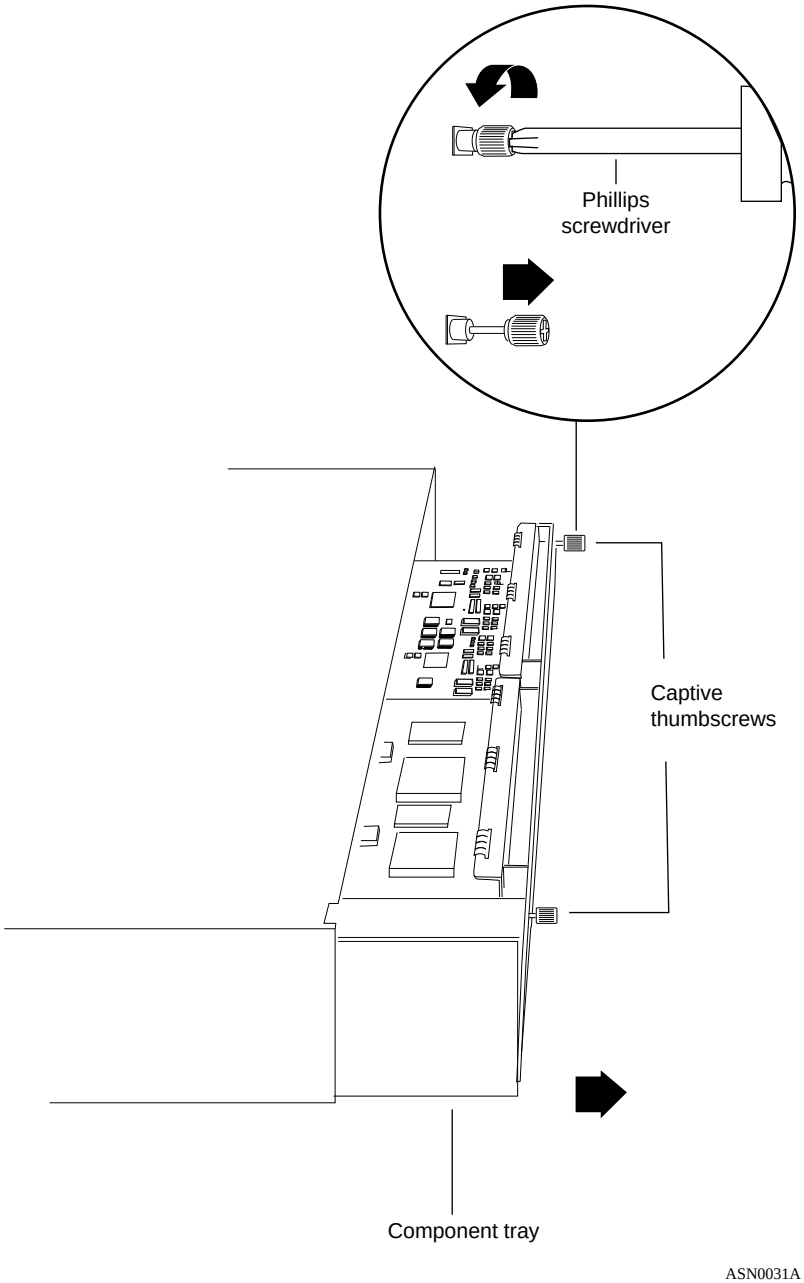

Figure 1-1. Removing the Component Tray

Attaching the Antistatic Wrist Strap

Your ASN comes with an antistatic wrist strap. The antistatic wrist strap directs the discharge of static electricity from your body to the chassis of the ASN, thereby avoiding discharge to sensitive electronic components. You must wear an antistatic wrist strap whenever you remove, install, or handle the net module.

Caution: Electrostatic discharge can damage hardware. Follow the procedure described here to protect your equipment from damage.

Attach the antistatic wrist strap as follows:

1. **Remove the strap, alligator clip, and cable from their package.**
2. **Attach (snap) the snap end of the cable to the wrist strap.**
3. **Place the strap around your wrist. Adjust the strap to ensure that the metal buckle inside the strap touches your skin.**
4. **Plug the jack at the other end of the cable into the opening on the alligator clip.**
5. **Attach the alligator clip to any unpainted metal surface on the component tray.**

Removing Filler Brackets

Filler brackets cover empty ASN net module positions and the openings above positions 1 and 3 (Figure 1-2). When you install a net module, you must remove the filler brackets not only from the position in which you want to install the net module, but also from the openings above positions 1 and 3.

Note: This manual refers to the end of the component tray where the net module ports are exposed as the "back end" of the tray. To perform maintenance tasks on the ASN components, you face the back end of the tray.

To remove a filler bracket, grasp its top edges. Then lift the bracket up and toward the front of the tray to release the metal tabs.

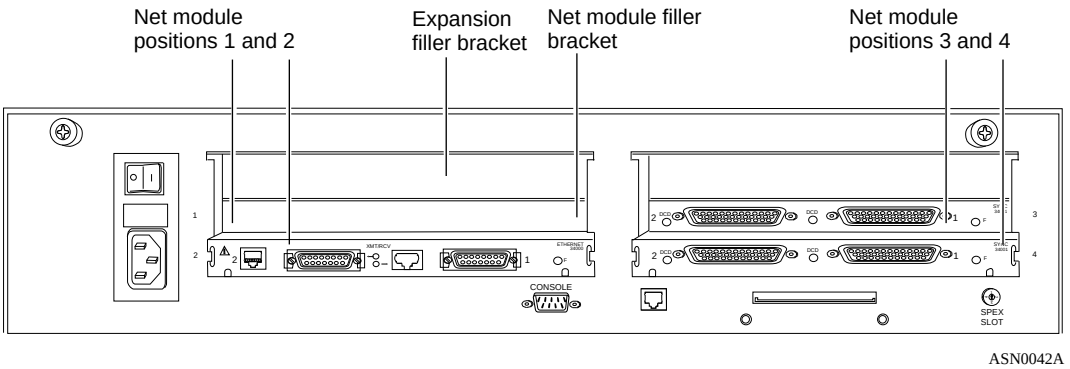

Figure 1-2. Locating Net Modules and Filler Brackets

Removing a Net Module

Read this section if a net module already occupies the slot you want to use. To remove a module from position 2 or 4 (Figure 1-2), you must first remove the filler bracket and net module (if any) above it. See the previous section, "Removing Filler Brackets."

Caution: Do not touch any components or boards in the ASN until you have attached the antistatic wrist strap.

To remove a net module:

1. **Grasp the handle on the net module. Use your thumb to push back the white retaining tab (Figure 1-3).**

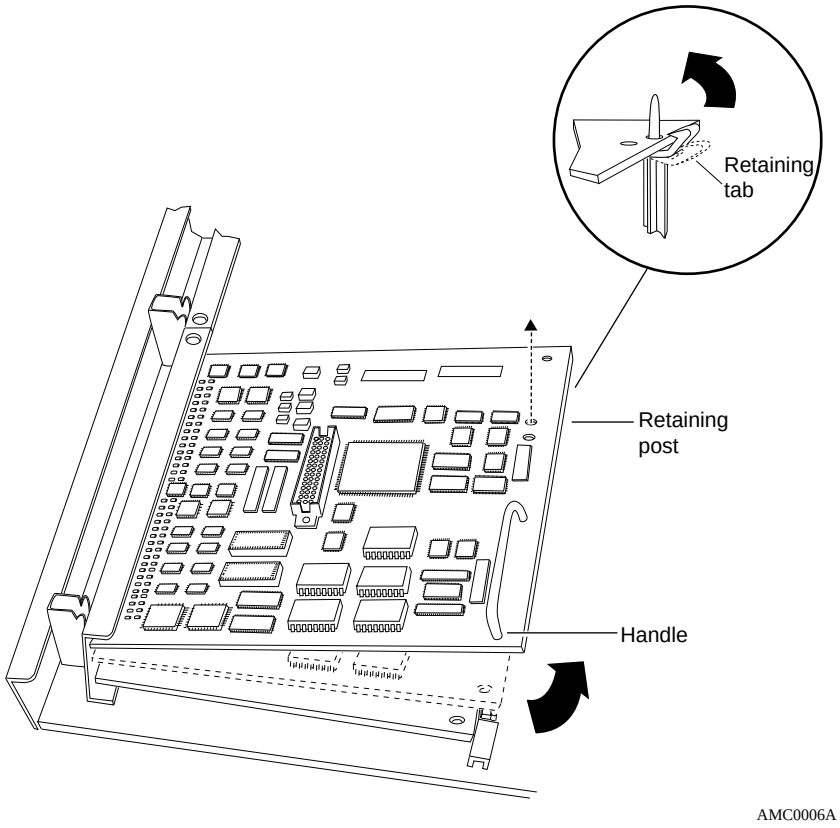

Figure 1-3. Preparing to Remove a Net Module

2. **Pull up to release the module from the connector (Figure 1-4).**

Caution: You must lift the module straight up. If you rock the module back and forth or side to side, you can bend the connector pins. Attempting to reinstall a net module with bent connector pins can damage the power supply.

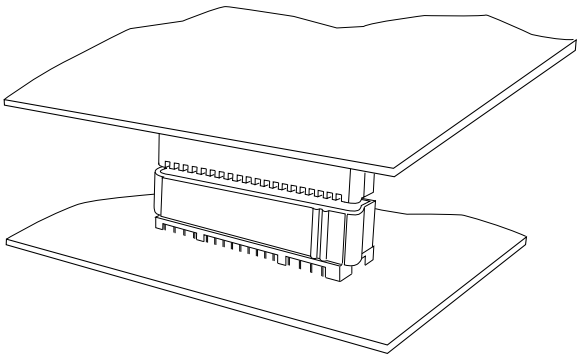

Figure 1-4. Removing a Net Module from the Connector

3. **Lift the module bracket up and toward the front of the tray to release it from the metal tabs that hold it in place (refer to Figure 1-3).**

Verifying the Net Module Jumper Settings

Before installing an MCE1 net module, be sure the jumpers match the requirements of your ASN. Figure 1-5 shows the jumper locations on the net module. Table 1-1 shows the jumper options.

Note: Jumpers S2 and S3 are open for 120-ohm operation, and for 75-ohm operation with no earth ground connection. But for 75-ohm operation with an earth ground connection, jumpers S2 and S3 are closed (S2 indicates transmit with coaxial shield, and S3 indicates receive with coaxial shield).

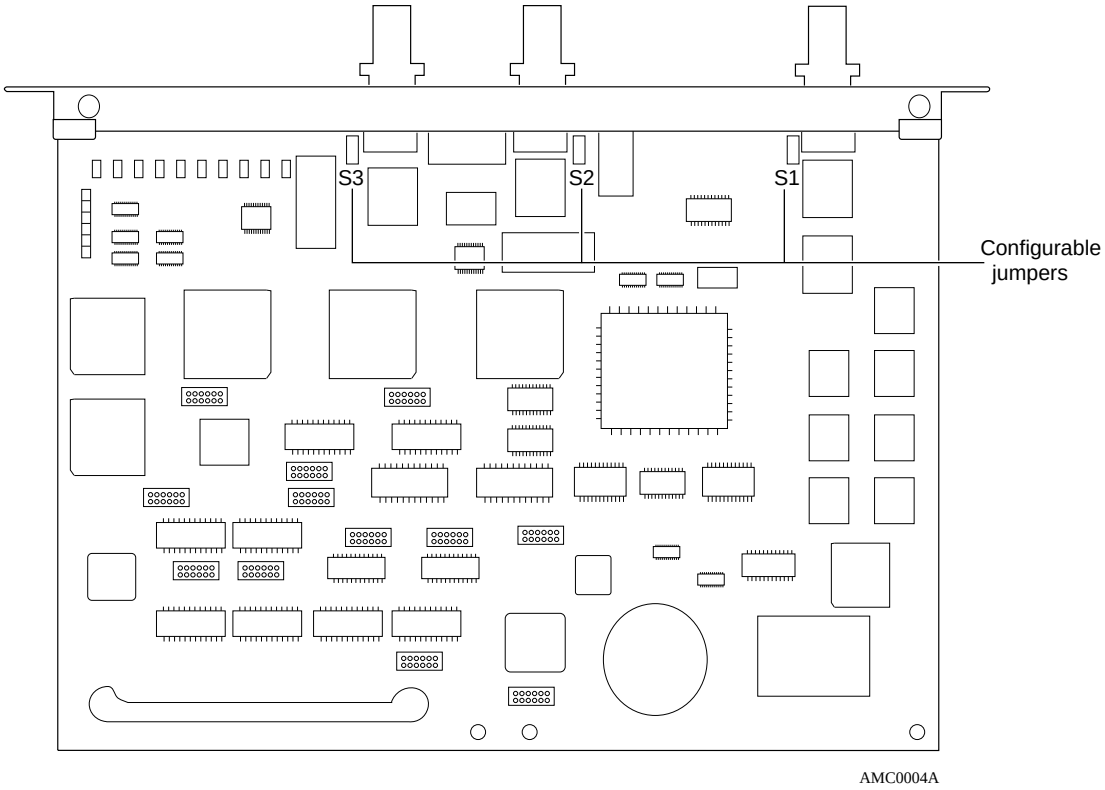

Figure 1-5. Jumper Locations on the MCE1 Net Module

Table 1-1. MCE1 Net Module Jumper Settings

Jumper Name	Default Setting	Jumper
S1: External Clock Ground Reference	Jumper closed	S1
S2: Receive Data Ground Reference	120 ohms and ungrounded 75-ohm operation: jumper open	S2
	75 ohms with earth ground connection: jumper closed	S2
S3: Transmit Data Ground Reference	120 ohms and ungrounded 75-ohm operation: jumper open	S3
	75 ohms with earth ground connection: jumper closed	S3

Installing a Net Module

Note: To install a net module in a position from which you just removed a net module of a different type, you must first delete the old net module from the router's configuration file. Then install the new module in the chassis. For information, refer to *Configuring Routers* if you use router software or *Administration Guide* if you use BayStream software.

To install a net module:

1. **Align the slots at each end of the module bracket with the metal tabs in the net module position that you want to use (Figure 1-6).**

   Do not rest the module bracket on the metal tabs; doing so makes it difficult to align the module connector with the connector on the system board.

2. **Align the module connector with the connector on the system board. Make sure that the white retaining post on the system board goes through the hole in the net module (Figure 1-6).**

Note: If you accidentally turn the white retaining post on the system board, it will not go through the hole in the net module. In this case, turn the post so that its rectangular base is perpendicular to the net module connectors on the system board.

3. **Firmly press the handle on the net module so that the net module is secure in its connector on the system board. Make sure that the white retaining tab snaps into place.**
4. **Press down on the module bracket so that it rests on the metal tabs.**

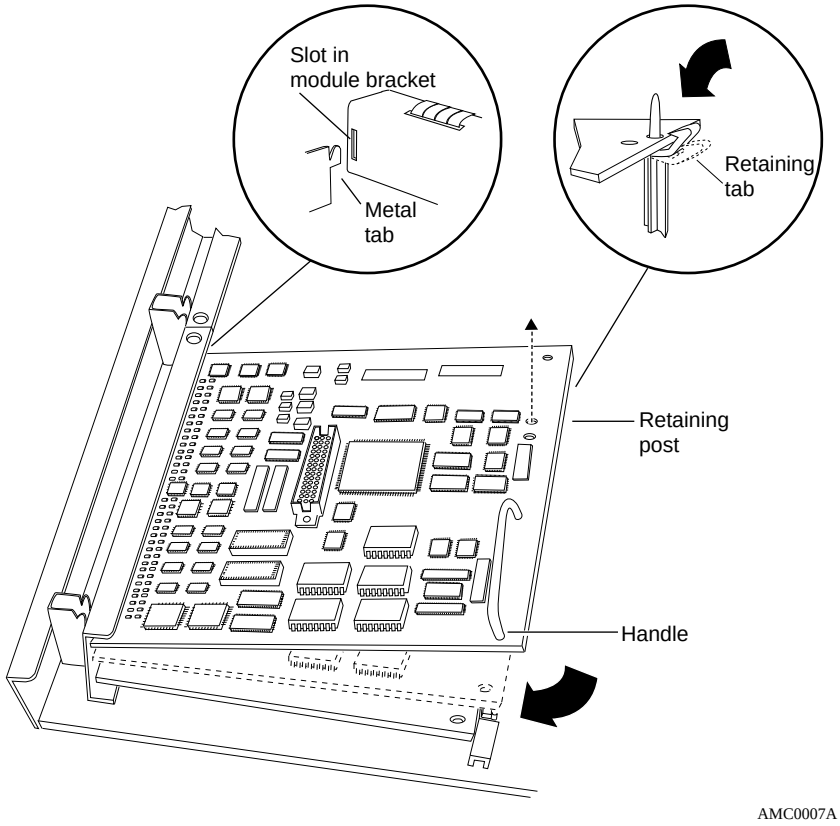

Figure 1-6. Aligning a Net Module

Installing a Filler Bracket

Install filler brackets in any unused net module positions. You must replace the filler brackets above positions 1 and 3.

Note: The filler brackets above positions 1 and 3 are different from those for positions 1 through 4. To fill the openings above positions 1 and 3, make sure you use the brackets labeled “Expansion Filler” (refer to Figure 1-2).

To install a filler bracket:

1. **Align the slots at each end of the bracket with the metal tabs of the position where you are installing the bracket (Figure 1-7).**

   Make sure that the edge of the bracket labeled “Top Surface” faces up.

2. **Position the bracket so that it rests on the metal tabs.**

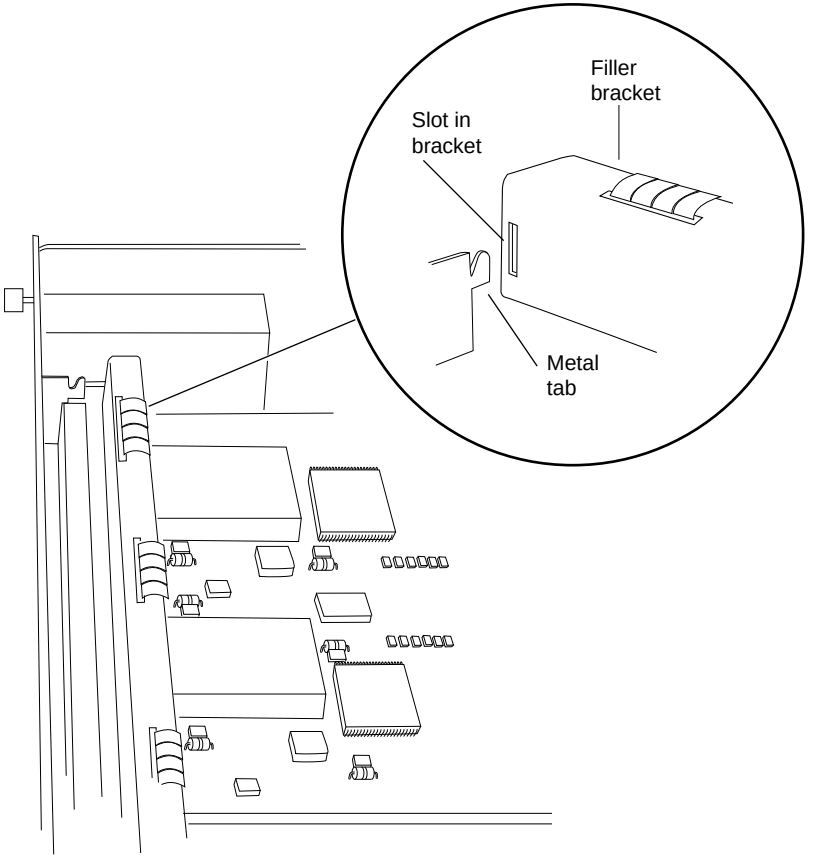

Figure 1-7. Installing a Filler Bracket

Replacing the Component Tray

Before you replace the component tray, remove the alligator clip of the antistatic strap from the chassis. Then remove the antistatic wrist strap from your wrist.

To replace the component tray:

1. **Gently slide the tray into the chassis.**
2. **Use a Phillips screwdriver to tighten the two captive screws that fasten the tray to the chassis (refer to Figure 1-1).**
3. **Reattach the cables to the proper connectors on the back panel.**

See Chapter 2 for information about the LEDs on the net module.

Chapter 2
Checking the MCE1 Net Module LEDs

This chapter describes the LEDs on the MCE1 net module. Figure 2-1 shows the MCE1 net module and Table 2-1 describes each LED.

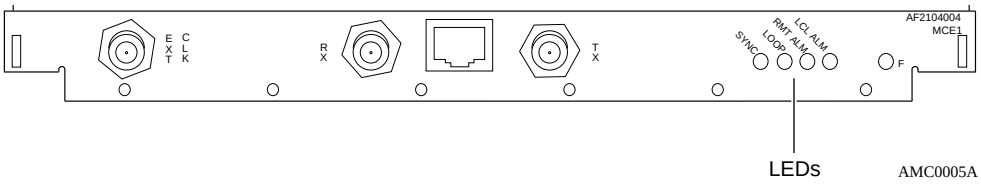

Figure 2-1. MCE1 Net Module LEDs

Table 2-1. Functions of the MCE1 Net Module LEDs

LED	Function
F (FAIL)	Lights during power up, and might flash during diagnostic testing. Turns off once the diagnostics complete successfully and the router boots. The LED remains lit if the net module or any connector on the net module fails diagnostics or cannot initialize the board. In this case, the DIAG LED on the ASN front panel will also be on.
LCL ALM (E1 Port Local Alarm)	Lights when the E1 port is in Local Alarm state.
RMT ALM (E1 Port Remote Alarm)	Lights when the E1 port has received the Remote Alarm signal.
LOOP (E1 Port Loopback)	Lights when the E1 port is in either a Line Loopback or Payload loopback condition.
SYNC (E1 Port Sync)	Lights when the E1 port is synchronized to the E1 network.

Appendix A
Cabling Requirements for the Net Module

This appendix provides technical information about the cabling requirements for the MCE1 net module.

MCE1 net module compliance for 120-ohm connection requires an Order No. AA0018014 cable (Figure A-1 and Table A-1).

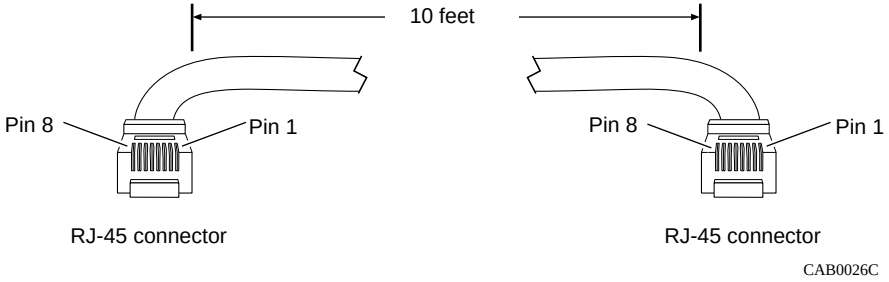

Figure A-1. Cable Order No. AA0018014

Table A-1. MCE1 RJ45 to RJ45 Cable (Order No. AA0018014)

Pair Number	Bay Networks Termination		Remote Termination	
	Pin	Signal	Pin	Signal
1	1	Receive Tip	1	Receive Tip
1	2	Receive Ring	2	Receive Ring
2	4	Transmit Tip	4	Transmit Tip
2	5	Transmit Ring	5	Transmit Ring

Appendix B
Requirements for European Operation

This appendix provides technical specifications and notes about operating the MCE1 net module (Order No. AF2104004, Part No. 111690) in Europe.

Installation Requirements

The net module is approved only for installation in a host, and with host attachments, which are either type approved for such apparatus or, if supplied after March 1, 1989, are marked with or supplied with a statement that the host is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Installation of the net module in an ASN will satisfy the conditions stated in this appendix. The ASN is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Power Requirements

The net module is powered from the host chassis and has the power requirements shown in Table B-1.

Table B-1. Net Module Power Requirements

Voltage	Amperage
+5 V	5 A
+12 V	0.75 A
-12 V	0.75 A

The power drawn from the host chassis, combined with that required for any other cards and accessories, must be within the power rating of the host chassis.

You must install the net module so as not to impair the integrity of the network protection from hazardous voltages used or generated internally by the host chassis.

Clearances and Creepage Distances

The clearances and creepage distances (shown as X and Y, respectively, in Table B-2 and Figure B-1) must be maintained between the card and

- The host chassis in which it is installed
- Any adjacent cards installed in the host chassis

The exception to this rule is the edge connector, which is located in the host chassis backplane, where no minimum distance applies.

The creepage distances apply to the normal office environment. When the local environment within the host chassis is subject to conductive pollution or dry nonconductive pollution that could become conductive due to condensation, the creepage distances shown in parentheses in Table B-2 will apply.

Table B-2. Net Module Clearances and Creepage Distances

Clearance (X)	Creepage (Y)	Voltage used or generated by other parts of the host or expansion card
2.0 mm	2.4 (3.8) mm	Up to 50 V rms or V dc
2.6 mm	3.0 (4.8) mm	Up to 125 V rms or V dc
4.0 mm	5.0 (8.0) mm	Up to 250 V rms or V dc
4.0 mm	6.4 (10.0) mm	Up to 300 V rms or V dc

Figure B-1. Clearances and Creepage Distances

Check the clearance and creepage distance between adjacent points as follows (Figure B-1):

- The clearance distance (X) is the shortest distance between two points measured through the air.
- The creepage distance (Y) is the shortest distance between two points measured across a surface.

You should obtain advice from a competent telecommunications safety engineer if in doubt.

Failure to install the net module according to these instructions will invalidate the Approval.

MCE1 Net Module Safety Status

Table B-3 lists the safety status of interconnection points to the connection of other equipment.

Table B-3. MCE1 Net Module Safety Status

Port Location	Port Description	Type of Circuit
J16	E1 120Ω balanced	Telecommunications network voltage (TNV)
J17 (TX)	E1 75Ω transmit	TNV
J15 (RX)	E1 75Ω receive	TNV
P1	Host Port	Safety extra-low voltage (SELV)
EXT CLK	External Clock	SELV

Strap (Jumper) Settings (Order No. AF2104004)

Table B-4 provides the single strap settings for the MCE1 net module.

Table B-4. MCE1 Net Module 75-ohm Single Settings

Option	Setting	Jumper
Transmit Data Ground Reference (COM 1)	Connected	S3
	Not Connected	S3
Receive Data Ground Reference (COM 1)	Connected	S2
	Not Connected	S2

Note: For Order No. AF2104004 120-ohm single settings, do not connect S2 and S3.